

REMARKS

I. SUGGESTION OF INTERFERENCE

This Revised Suggestion of Interference is being filed to update the Suggestion of Interference filed on December 21, 2004. Since then, interfering patent applications have issued as patents and the Board issued a decision concerning Applicants' pending claims. Specifically, the Board reversed the rejection of claims 18-19, 21-22, 24-25, 32-33, 35-36, and 38-39 and affirmed the rejection of claims 20, 23, 26, 34, 37, and 40. The Examiner's Amendment, dated April 15, 2009, canceled claims 20, 23, 26, 34, 37, and 40.

This paper does not alter the proposed counts previously suggested.

A. Identification of the Patents with which Applicants Seek an Interference

Applicants request that an interference be declared with the following patents:

1. U.S. Pat. 6,200,451 (S.N. 09/251,641),
2. U.S. Pat. 6,444,109 (S.N. 09/698,370),
3. U.S. Pat. 6,544,397 (S.N. 09/821,205),
4. U.S. Pat. 6,905,587 (S.N. 10/341,859), and
5. U.S. Pat. 7,267,259 (S.N. 10/456,329).

These patents are all owned by MacDermid, Incorporated.

Applicants' assignee (Enthone Inc.) owns the following additional related patents:

U.S. Pat. 6,395,329

U.S. Pat. 6,860,925

Applicants do not request inclusion of the latter two patents in the interference.

B. Proposed Counts

Applicants propose the following counts, where Count I corresponds to claim 1 of 6,200,451 and to claim 18 of present application 10/099,936; Count II corresponds to claim 9 of 6,200,451 and to claim 24 of present application 10/099,936; and Count III corresponds to claim 1 of 6,444,109 and to claim 32 of present application 10/099,936:

- I. A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:

- a). a soluble source of silver ions;
- b). an acid;
- c). an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphoteric salts, resinous amines, resinous amides, fatty acids, resinous acids, ethoxylated versions of any of the foregoing, propoxylated versions of any of the foregoing and mixtures of any of the foregoing.

OR

A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:

- a). a soluble source of silver ions;
- b). an acid;

c). an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, and ethoxylated versions of any of the foregoing.

- II. An immersion silver plating solution comprising (i) a soluble source of silver ions, (ii) an acid and (iii) an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphoteric salts, resinous amines, resinous amides, fatty acids, ethoxylated versions of any of the foregoing, propoxylated versions of any of the foregoing and mixtures of any of the foregoing.

OR

An immersion silver plating solution comprising (i) a soluble source of silver ions, (ii) an acid and (iii) an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, ethoxylated versions of any of the foregoing.

- III. A process for improving the solderability of a metal surface, said process comprising:

a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter

b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphoteric salts, resinous amines, resinous amides, fatty acids, resinous acids, ethoxylated versions of any of the foregoing, and mixtures of any of the foregoing.

OR

A process for improving the solderability of a metal surface, said process comprising:

a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter

b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, and ethoxylated versions of any of the foregoing.

C. Claims Corresponding to the Proposed Counts

For purposes of this interference, the claims correspond to the proposed counts as follows:

- U.S. Pat. 6,200,451 (S.N. 09/251,641)
Count I: Claims 1-8
Count II: Claims 9-12
- U.S. Pat. 6,444,109 (S.N. 09/698,370)
Count III: Claims 1-8
- U.S. Pat. 6,544,397 (S.N. 09/821,205)
Count I: Claims 1-8
Count II: Claims 9-11
- U.S. Pat. 6,905,587 (S.N. 10/341,859)
Count III: Claims 1-8
- U.S. Pat. 7,267,259 (S.N. 10/456,329)
Count I: Claims 1-4
Count II: Claims 5-7
- Present Application 10/099,936
Count I: Claims 18-19, 21-22

Count II: Claims 24-25, 38-39
Count III: Claims 32-33, 35-36

1. Correspondence of MacDermid's Claims to Count I

a. U.S. Pat. 6,200,451

Count I anticipates claim 1 of U.S. Pat. 6,200,451. Therefore, claim 1 corresponds to Count I. 37 CFR 41.207(b)(2). Claims 2-8 depend from claim 1, and also correspond to Count I.

Claim 2 requires the additional limitation that "the silver plating solution also comprises material selected from the group consisting of imidazoles, benzimidazoles, imidazole derivatives and benzimidazole derivatives." This additional limitation does not render claim 2 patentable over Count I. Inclusion of imidazoles and imidazole derivatives in immersion silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,200,451. For example, U.S. Pat. 5,733,599 (prior art to the '451 patent under 35 U.S.C. 102(a) and (e)), entitled "Method for Enhancing the Solderability of a Surface," discloses including imidazoles and imidazole derivatives in immersion silver plating solutions at column 2, line 55; column 3, lines 1-38; and column 5, lines 16-21. Published European Application EP0797380A1 corresponds to

U.S. Pat. 5,733,599 and was published on September 24, 1997. It is prior art to the '451 patent under 35 U.S.C. 102(b) and discloses including imidazoles and imidazole derivatives in immersion silver plating solutions at page 3, lines 6 and 15-43; page 4, line 53 through page 5, line 10. Therefore, claim 2 corresponds to Count I. 37 CFR 41.207(b)(2).

Claim 3 depends from claim 1 and adds the limitation that "the silver plating solution also comprises an oxidant." This additional limitation does not render claim 3 patentable over Count I. Inclusion of an oxidant in silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,200,451. For example, U.S. Pat. 5,733,599 discloses including oxidants in immersion silver plating solutions at column 2, line 56; column 3, lines 39-46; and column 5, lines 16-21. Published European Application EP0797380A1 discloses including oxidants in immersion silver plating solutions at page 3, lines 7 and 44-47; page 4, line 53 through page 5, line 10. Therefore, claim 3 corresponds to Count I. 37 CFR 41.207(b)(2).

Claim 4 further requires that the metal surface being treated with the silver plating solution be copper. Copper is

well known in the art to provide a good substrate for silver plating solutions. See, for example, Geld, Metal Finishing (1960) August, p 53 (describing a silver coating process involving an initial bright dip of the brass or copper substrate, followed by a silver plating step); see also EP0797380A1 at page 2, lines 41-42 ("The current invention proposes the use of an immersion silver coating as an improved solderability preservative for various surfaces, *particularly copper surfaces*"). Therefore, claim 4 corresponds to Count I. 37 CFR 41.207(b) (2).

Claim 5 is directed to selected additives falling within the broader class of additives recited in Count I. The particular additives are obvious in view of the broader classes. For example, tallowamine and cocoamine are commonly recited in literature describing fatty amines. See, for example, U.S. Pat. 4,542,068 (col. 2, line 52-66), and U.S. Pat. 4,339,343, (col. 4, lines 10-26). Stearic acid, oleic acid, and palmitic acid are commonly listed in literature reciting fatty acids. See, for example, Solomons, Fundamentals of Organic Chemistry, p. 895 (1987), which lists palmitic, stearic, and oleic acids in its list of seven "Common fatty acids." Therefore, claim 5

corresponds to Count I. 37 CFR 41.207(b) (2).

Claim 6 combines the limitations of claims 2 and 4. Claim 7 combines the limitations of claims 2, 3, and 4. Claim 8 combines the limitations of claims 2, 3, 4, and 5. None of these combinations are patentable over Count I in view of the references discussed above. Therefore, claims 6-8 correspond to Count I. 37 CFR 41.207(b) (2).

b. U.S. Pat. 6,544,397

Claims 1-8 of the '397 patent are identical to claims 1-8 of the '451 patent except for the added limitation that the additive be present in the silver plating solution at a concentration "from about .1 g/l to about 15 g/l." For the same reasons discussed above for claims 1-8 of the '451 patent, claims 1-8 of the '397 correspond to count I. The added concentration limitation does not change this conclusion. In fact, during prosecution of the '397 patent, the examiner rejected the claims under the obviousness-type double patenting rejection as being unpatentable over the corresponding claims of the '451 patent. Therefore, claims 1-8 correspond to Count I. 37 CFR 41.207(b) (2).

c. U.S. Pat. 7,267,259

Claim 1 of the '259 patent corresponds to Count I. Claim 1 differs from Count I in that it is limited to treating copper surfaces. This is not a significant difference. As discussed above, copper is well known in the art to provide a good substrate for silver plating solutions.

Claim 1 also requires that the silver ion concentration in the plating solution fall within the range "0.1 to 25 g/l." This limitation does not render the claimed subject matter patentably distinct from Count I, which does not specify a silver ion concentration. For example, U.S. Pat. 5,733,599 discloses immersion silver plating solution having a concentration of silver between "0.1 to 25 grams per liter" at column 2, lines 59-60. See also EP0797380A1 at page 3, lines 10-11.

Claim 1 also requires that the immersion silver plating solution contain an aromatic nitro compound. Including an aromatic nitro compound in silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 7,267,259. For example, U.S. Pat. 5,733,599 discloses including aromatic nitro compounds in immersion silver plating

solutions at column 3, lines 41-44 and column 5, lines 16-21. Published European Application EP0797380A1 discloses including aromatic nitro compounds in immersion silver plating solutions at page 3, lines 45-46; page 4, line 53 through page 5, line 10. Therefore, claim 1 corresponds to Count I. 37 CFR 41.207(b)(2).

Claims 2-4 depend from claim 1 and also correspond to Count I. Claim 2 adds the limitation that "the aromatic nitro compound comprises an aromatic dinitro compound." Claim 3 requires that "the aromatic nitro compound is 3, 5 dinitrohydroxy benzoic acid." Claim 4 requires that the "aromatic nitro compound is from 0.1 to 25 grams per liter." The prior art to the '259 patent expressly disclosed including aromatic dinitro compounds—including 3,5 dinitrohydroxy benzoic acid—in immersion silver plating solutions at a concentration ranging from 0.1 to 25 grams per liter. '599 patent, col. 3, lines 41-46, col. 5, lines 16-21; EP0797380A1, page 3, lines 45-47, p. 4, line 53 through p. 5, line 10. Therefore, claims 2-4 correspond to Count I. 37 CFR 41.207(b)(2).

2. Correspondence of MacDermid's Claims to Count II

a. U.S. Pat. 6,200,451

Claim 9 is anticipated by Count I and therefore corresponds

to Count I. Claims 10-12 depend from claim 9 and also correspond to Count I.

Claim 10 requires that the immersion silver plating solution also include "a material selected from the group consisting of imidazoles, benzimidazoles, imidazole derivatives, and benzimidazole derivatives." Claim 11 depends from claim 9 and requires that the plating solution also include an oxidant. Claim 12 depends from claim 9 and requires that the plating solution's additive be "selected from the group consisting of ethoxylated tallowamine, ethoxylated cocoamine, amines derived from tall oil acids, stearic acid, oleic acid, palmitic acid, acids derived from the distillation of tall oil, (stearamidopropyl) dimethyl hydroxyethylaminium dihydrogen phosphate, alkyliminadipropionic acid monosodium salts, and mixtures of the foregoing." As discussed above, these limitations were well known in the art prior to the effective date of the '451 patent. See U.S. Patent 5,733,599 (col. 2, lines 55-56; col. 3, lines 1-46; and col. 5, lines 16-21); EP0797380A1 (p. 3, lines 6-7 and 15-47; p. 4, line 53-p. 5, line 10; U.S. Pat. 4,542,068 (col. 2, lines 52-66), and U.S. Pat. 4,339,343, (col. 4, lines 10-26); Solomons, Fundamentals of

Organic Chemistry, p. 895 (1987). Therefore, claims 10-12 correspond to Count I. 37 CFR 41.207(b)(2).

b. U.S. Pat. 6,544,397

Claim 9 of the '397 patent corresponds to Count II. Claim 9's requirements for the silver plating solution are directed to selected additives falling within the broader class of additives recited in Count II. The particular additives are obvious in view of the broader classes. For example, tallowamine and cocoamine are commonly recited in literature describing fatty amines. See, for example, U.S. Pat. 4,542,068 (col. 2, line 52-66), and U.S. Pat. 4,339,343, (col. 4, lines 10-26). Stearic acid, oleic acid, and palmitic acid are commonly listed in literature reciting fatty acids. See, for example, Solomons, Fundamentals of Organic Chemistry, p. 895 (1987), which lists palmitic, stearic, and oleic acids in its list of seven "Common fatty acids." Therefore, claim 9 corresponds to Count II. 37 CFR 41.207(b)(2).

Claims 10 and 11 depend from claim 9 and also correspond to Count II. Claim 10 requires that the plating solution include "a material selected from the group consisting of imidazoles, benzimidazoles, imidazole derivatives, and benzimidazole

derivatives." As discussed above, including imidazoles and imidazole derivatives in immersion silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,544,397. See U.S. Pat. 5,733,599, col. 2, line 55, col. 3, lines 1-38, and col. 5, lines 16-21; EP0797380A1, p. 3, lines 6 and 15-43, p. 4, line 53-p. 5, line 10. Therefore, claim 10 corresponds to Count II. 37 CFR 41.207(b)(2).

Claim 11 depends from claim 9 and requires that the silver plating solution also include an oxidant. As discussed above, including an oxidant in silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,544,397. See U.S. Pat. 5,733,599, col. 2, line 56, col. 3, lines 39-46, and col. 5, lines 16-21; EP0797380A1, p. 3, lines 7, 44-47; p. 4, line 53-p. 5, line 10. Therefore, claim 11 corresponds to Count II. 37 CFR 41.207(b)(2).

c. U.S. Pat. 7,267,259

Claim 5 of the '259 patent corresponds to Count II. Claim 5 requires that the silver ion concentration in the plating solution fall within the range "0.1 to 25 g/l." As discussed above, this limitation does not render the claimed subject matter patentably distinct from Count II, which does not specify

a silver ion concentration. See U.S. Pat. 5,733,599, col. 2, lines 59-60; EP0797380A1, p. 3, lines 10-11.

Claim 5 also requires that the immersion silver plating solution contain an aromatic dinitro compound. As discussed above, including an aromatic dinitro compound in silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 7,267,259. See U.S. Pat. 5,733,599 col. 3, lines 41-45, col. 5, lines 16-21; EP0797380A1, p. 3, lines 45-47; p. 4, line 53-p. 5, line 10. Therefore, claim 5 corresponds to Count II. 37 CFR 41.207(b)(2).

Claims 6-7 depend from claim 5 and also correspond to Count II. Claim 6 requires that "the aromatic dinitro compound is 3, 5 dinitrohydroxy benzoic acid." Claim 7 requires that the "aromatic dinitro compound is from 0.1 to 25 grams per liter." The prior art to the '259 patent expressly disclosed including aromatic dinitro compounds—including 3,5 dinitrohydroxy benzoic acid—in immersion silver plating solutions at a concentration ranging from 0.1 to 25 grams per liter. '599 patent, col. 3, lines 41-46, col. 5, lines 16-21; EP0797380A1, page 3, lines 45-47, page 4, line 53 through page 5, line 10. Therefore, claims 6-7 correspond to Count II. 37 CFR 41.207(b)(2).

3. Correspondence of MacDermid's Claims to Count III

a. U.S. Pat. 6,444,109

Count III directly anticipates claim 1 of the '109 patent. Therefore, claim 1 corresponds to Count III. 37 CFR 41.207(b)(2). Claims 2-8 depend from claim 1 and also correspond to Count III.

Claim 2 requires that the silver plating solution also "comprises a material selected from the group consisting of imidazoles, benzimidazoles, imidazole derivatives and benzimidazole derivatives." As discussed above, including imidazoles and imidazole derivatives in immersion silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,444,109. See U.S. Pat. 5,733,599, col. 2, line 55, col. 3, lines 1-38, and col. 5, lines 16-21; EP0797380A1, p. 3, lines 6 and 15-43, p. 4, line 53-p. 5, line 10. Therefore, claim 2 corresponds to Count III. 37 CFR 41.207(b)(2).

Claim 3 requires that the silver plating solution also comprises an oxidant. As discussed above, including an oxidant in silver plating solutions was well known in the art before the earliest effective filing date of U.S. Pat. 6,444,109. See U.S.

Pat. 5,733,599, col. 2, line 56, col. 3, lines 39-46, and col. 5, lines 16-21; EP0797380A1, p. 3, lines 7, 44-47; p. 4, line 53-p. 5, line 10. Therefore, claim 3 corresponds to Count III. 37 CFR 41.207(b)(2).

Claim 4 further requires that the metal surface being treated with the silver plating solution be copper. Copper is well known in the art to provide a good substrate for silver plating solutions. See, for example, Geld, Metal Finishing (1960) August, p 53 (describing a silver coating process involving an initial bright dip of the brass or copper substrate, followed by a silver plating step). Therefore, claim 4 corresponds to Count III. 37 CFR 41.207(b)(2).

Claim 5 is directed to selected additives falling within the broader class of additives recited in Count III. The particular additives are obvious in view of the broader classes. For example, tallowamine and cocoamine are commonly recited in literature describing fatty amines. See, for example, U.S. Pat. 4,542,068 (col. 2, line 52-66), and U.S. Pat. 4,339,343, (col. 4, lines 10-26). Stearic acid, oleic acid, and palmitic acid are commonly listed in literature reciting fatty acids. See, for example, Solomons, Fundamentals of Organic Chemistry, p. 895

(1987), which lists palmitic, stearic, and oleic acids in its list of seven "Common fatty acids." Therefore, claim 5 corresponds to Count III. 37 CFR 41.207(b)(2).

Claim 6 combines the limitations of claims 2 and 4. Claim 7 combines the limitations of claims 2, 3, and 4. Claim 8 combines the limitations of claims 2, 3, 4, and 5. None of these combinations are separately patentable over Count III. Therefore, claims 6-8 also correspond to Count III. 37 CFR 41.207(b)(2).

b. U.S. Pat. 6,905,587

Claims 1-8 of the '587 patent are identical to claims 1-8 of the '109 patent except for the added limitation that the additive be present in the silver plating solution at a concentration "from about .1 g/l to about 15 g/l." For the same reasons discussed above for claims 1-8 of the '109 patent, claims 1-8 of the '587 patent correspond to count I. The added concentration limitation does not change this conclusion.

The examiner rejected these claims during prosecution for non-statutory double patenting on the basis that the range limitation did not render claims 9-16 nonobvious over claims 1-8 of the '109 patent: "This range is within the scope of the

claims of the ['109] patent which includes all additive concentrations. Concentration is a result effective variable. Optimization of the concentration of the additive is a matter of routine optimization within the skill of the one of ordinary skill in the art." Therefore, claims 1-8 correspond to Count III. 37 CFR 41.207(b) (2).

D. Interfering Subject Matter

The following charts demonstrate that for each of the proposed counts the parties' claims interfere within the meaning of 37 CFR 41.203(a).

Count I

Applicants' present application 10/099,936	U.S. Patent 6,200,451
18. A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:	1. A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:
a). a soluble source of silver ions;	a). a soluble source of silver ions;
b). an acid;	b). an acid;

Applicants' present application 10/099,936	U.S. Patent 6,200,451
c). an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, and ethoxylated versions of any of the foregoing.	c). an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphoteric salts, resinous amines, resinous amides, fatty acids, resinous acids, ethoxylated versions of any of the foregoing, propoxylated versions of any of the foregoing and mixtures of any of the foregoing.

The only substantive difference between the respective claims is that the Markush group in claim 1 of U.S. Pat. 6,200,451 contains the following elements not included in the Markush group of applicants' claim 18: amphoteric salts, resinous amines, resinous amides, fatty acids, resinous acids, propoxylated versions of the other additives, or mixtures of the additives. Interference in fact exists for Count I because Claim 18 of the applicants' application anticipates claim 1 of U.S. Pat. 6,200,451 and vice versa. See e.g. *In re Schaumann*, 572 F.2d 312, 197 USPQ 5, 9-10 (CCPA 1978); *Ex parte A*, 17 USPQ2d 1716, 1718 (BPAI 1990).

Count II

Applicants' present application 10/099,936	U.S. Patent 6,200,451
24. An immersion silver plating solution comprising	9. An immersion silver plating solution comprising

(i) a soluble source of silver ions,	(i) a soluble source of silver ions,
(ii) an acid and	(ii) an acid and
(iii) an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, ethoxylated versions of any of the foregoing.	(iii) an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphoteric salts, resinous amines, resinous amides, fatty acids, ethoxylated versions of any of the foregoing, propoxylated versions of any of the foregoing and mixtures of any of the foregoing.

The only substantive difference between the respective claims is that the Markush group in claim 9 of 6,200,451 contains the following elements not included in the Markush group of applicants' claim 24: amphoteric salts, resinous amines, resinous amides, fatty acids, resinous acids, propoxylated versions of the other additives, or mixtures of the additives.

Interference in fact exists for count II because Claim 24 of the applicants' application anticipates claim 9 of U.S. Pat. 6,200,451 and vice versa. See e.g. *In re Schaumann*, 572 F.2d 312, 197 USPQ 5, 9-10 (CCPA 1978); *Ex parte A*, 17 USPQ2d 1716, 1718 (BPAI 1990).

Count III

Applicant's present application 10/099,936	U.S. Patent 6,444,109
32. A process for improving the solderability of a metal surface, said process comprising:	1. A process for improving the solderability of a metal surface, said process comprising:
a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter	a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter
b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, ethoxylated versions of any of the foregoing.	b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, amphateric salts, resinous amines, resinous amides, fatty acids, resinous acids, ethoxylated versions of any of the foregoing, and mixtures of any of the foregoing.

The only substantive difference between these claims is that the Markush group in claim 1 of 6,444,109 contains the following elements not included in the Markush group of applicants' claim 32: amph[o]teric salts, resinous amines,

resinous amides, fatty acids, resinous acids, or mixtures of the additives. Interference in fact exists for count III because Claim 32 of the applicants' application anticipates claim 1 of U.S. Pat. 6,444,109 and vice versa. See e.g. *In re Schaumann*, 572 F.2d 312, 197 USPQ 5, 9-10 (CCPA 1978); *Ex parte A*, 17 USPQ2d 1716, 1718 (BPAI 1990).

E. Applicant has Priority Over the Interfering Patents

As shown below in section G, the present application has an effective filing date of December 9, 1994. The patents for which a declaration of interference is requested each has an earliest effective filing date of February 17, 1999.

In particular, the present application is a continuation of Ser. No. 08/939,656 (now 6,395,329), filed September 29, 1997, which was a continuation of application Ser. No. 08/567,885 (now abandoned), filed December 8, 1995, which claimed priority to Great Britain application Ser. No. 9425031.3, filed on December 9, 1994.

The filing date of U.S. Pat. No. 6,200,451 was February 17, 1999. Each of U.S. Pat. No. 6,444,109 (S.N. 09/698,370); U.S. Pat. No. 6,544,397 (S.N. 09/821,205); U.S. Pat. No. 6,905,587 (S.N. 10/341,859) and U.S. Pat. No. 7,267,259 (S.N. 10/456,329) claims this priority date of February 17, 1999.

Applicants are, therefore, the senior party by more than four years under 37 CFR 41.201.

F. The Written Description of the Claims in the Present Specification

The following tables demonstrate that Applicants' pending

claims 18-19, 21-22, 24-25, 32-33, 35-36, and 38-39 are supported by the present specification. The citations are exemplary and not exhaustive.

Applicants' claim	Support in specification
<p>18. A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:</p> <p>a). a soluble source of silver ions;</p> <p>b). an acid;</p> <p>c). an additive selected from the group consisting of</p> <p>fatty amines,</p> <p>fatty amides,</p> <p>quaternary salts,</p> <p>and ethoxylated versions of any of the foregoing.</p>	<p>Page 11, lines 1-9: "immersion plating etched [metal] pads ... in a metal plating step to form solderable plated metal surfaces."</p> <p>Page 14, line 12: "silver and bismuth ions are particularly preferred."</p> <p>Page 14, line 18: "water soluble metal salt ... silver nitrate."</p> <p>Page 24, line 17: "compatible acid."</p> <p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>

Applicants' claim	Support in specification
<p>19. A process according to claim 18 wherein the silver plating solution also comprises material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives</p> <p>and benzimidazole derivatives.</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>
<p>21. A process according to claim 18 wherein the metal surface comprises copper.</p>	<p>Page 27, line 16: "generally copper."</p>

Applicants' claim	Support in specification
<p>22. A process according to claim 21 wherein the silver plating solution also comprises a material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives, and</p> <p>benzimidazole derivatives.</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>

Applicants' claim	Support in specification
<p>24. An immersion silver plating solution comprising</p> <p>(i) a soluble source of silver ions,</p> <p>(ii) an acid and</p> <p>(iii) an additive selected from the group consisting of</p> <p>fatty amines,</p> <p>fatty amides,</p> <p>quaternary salts,</p> <p>ethoxylated versions of any of the foregoing.</p>	<p>Page 14, line 18: "water soluble metal salt ... silver nitrate."</p> <p>Page 24, line 17: "compatible acid."</p> <p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>

Applicants' claim	Support in specification
<p>25. An immersion plating solution according to claim 24 also comprising a material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives,</p> <p>and benzimidazole derivatives.</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>

Applicants' claim	Support in specification
<p>32. A process for improving the solderability of a metal surface, said process comprising:</p> <p>a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter</p> <p>b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of</p> <p>fatty amines,</p> <p>fatty amides,</p> <p>quaternary salts,</p> <p>ethoxylated versions of any of the foregoing.</p>	<p>Page 16, line 24: "Alternatively, the metal surfaces are formed in the plating step and subsequently the formed metal surfaces are contacted with a solution comprising a tarnish inhibitor in a further step."</p> <p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>

Applicants' claim	Support in specification
<p>33. A process according to claim 32 wherein the silver plating solution comprises a material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives</p> <p>and benzimidazole derivatives.</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>
<p>35. A process according to claim 32 wherein the metal surface comprises copper.</p>	<p>Page 27, line 16: "generally copper."</p>

Applicants' claim	Support in specification
<p>36. A process according to claim 35 wherein the silver plating solution comprises a material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives,</p> <p>and benzimidazole derivatives.</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>

Applicants' claim	Support in specification
<p>38. (Previously presented) An immersion silver plating solution comprising an additive selected from the group consisting of</p> <p>fatty amines,</p> <p>fatty amides,</p> <p>quaternary salts,</p> <p>and ethoxylated versions of any of the foregoing.</p>	<p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>

Applicants' claim	Support in specification
<p>39. (Previously presented) An immersion plating solution according to claim 38 also comprising a material selected from the group consisting of</p> <p>imidazoles,</p> <p>benzimidazoles,</p> <p>imidazole derivatives, and</p> <p>benzimidazole derivatives</p>	<p>Page 23, line 4: "alkyl benzyl imidazoles, e.g. undecyl imidazoles."</p> <p>Page 23, line 8: "benzimidazoles."</p> <p>Page 23, lines 4-7: "undecyl imidazole ... in which the alkyl or benzyl groups are optionally substituted."</p> <p>Page 23, line 11: "2-(p-chlorobenzyl) benzimidazole."</p>

G. Applicants' Constructive Reductions to Practice

Application serial number GB 9425031.3 was filed on December 9, 1994 in Great Britain. Application Ser. No. 08/567,885 (now abandoned) was filed in the United States on December 8, 1995, claiming priority under 35 U.S.C. 119 to GB 9425031.3. Application Ser. No. 08/939,656 (now 6,395,329) was filed as a continuation of 08/567,885 in the United States on September 29, 1997. The specifications for each of these three applications are substantially the same.

The following chart shows where these applications provide a constructive reduction to practice within the scope of each of

the three proposed counts.

Count I 18. A process for improving the solderability of a metal surface, said process comprising treating the metal surface with an immersion silver plating solution, said solution comprising:	Page 11, lines 1-9: "immersion plating the etched [metal] pads ... in a metal plating step to form solderable plated metal surfaces." Page 14, line 12-13: "silver and bismuth ions are particularly preferred."
a). a soluble source of silver ions;	Page 14, line 18: "water soluble metal salt ... silver nitrate."
b). an acid;	Page 24, line 17: "compatible acid."
c). an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, and ethoxylated versions of any of the foregoing.	Page 22, line 10: "fatty acid amines." Page 22, line 13: "amides" listed as type of fatty acid amine. Page 22, line 14: "quaternary ammonium salts." Page 22, line 14-15: "ethoxylated quaternary ammonium salts, ethoxylated amides."

Count II	
24. An immersion silver plating solution comprising	Page 14, line 6-13: "the [immersion] plating composition comprises metal ions...silver and bismuth ions are particularly preferred."
(i) a soluble source of silver ions,	Page 14, line 18: "water soluble metal salt ... silver nitrate."
(ii) an acid and	Page 24, line 17: "compatible acid."
(iii) an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, ethoxylated versions of any of the foregoing.	<p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14-15: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>
Count III	
32. A process for improving the solderability of a metal surface, said process comprising:	<p>Page 11, lines 1-9: "immersion plating the etched [metal] pads ... in a metal plating step to form solderable plated metal surfaces."</p> <p>Page 14, line 12-13: "silver and bismuth ions are particularly preferred."</p>

<p>a). contacting the metal surface with an immersion silver plating solution thereby producing an immersion silver plate upon the metal surface; and thereafter</p>	<p>Page 16, line 24: "Alternatively, the metal surfaces are formed in the plating step and subsequently the formed metal surfaces are contacted with a solution comprising a tarnish inhibitor in a further step."</p>
<p>b). treating the immersion silver plated metal surface with a solution comprising an additive selected from the group consisting of fatty amines, fatty amides, quaternary salts, ethoxylated versions of any of the foregoing.</p>	<p>Page 22, lines 8-9: "Suitable tarnish inhibitors ...include"</p> <p>Page 22, line 10: "fatty acid amines."</p> <p>Page 22, line 13: "amides" listed as type of fatty acid amine.</p> <p>Page 22, line 14: "quaternary ammonium salts."</p> <p>Page 22, line 14-15: "ethoxylated quaternary ammonium salts, ethoxylated amides."</p>

H. The Requirements of 35 U.S.C. 135(b) are Met.

All claims of the present application were present within one year of the issuance of the relevant patents and within one year of the publication of the relevant applications.

II. CONCLUSION

The Board reversed the outstanding rejection of pending claims 18-19, 21-22, 24-25, 32-33, 35-36, and 38-39. Therefore,

these claims are allowable. MPEP 1214.04, 1214.06. Applicants respectfully request that an interference be declared between the present application and the following:

1. U.S. Pat. 6,200,451 (S.N. 09/251,641),
2. U.S. Pat. 6,444,109 (S.N. 09/698/370),
3. U.S. Pat. 6,544,397 (S.N. 09/821,205),
4. U.S. Pat. 6,905,587 (S.N. 10/341,859), and
5. U.S. Pat. 7,267,259 (S.N. 10/456,329).

Please contact the undersigned if there are any questions concerning the foregoing.

Respectfully submitted,

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